



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/601,702	08/04/2000	HIDEYOSHI HORIMAI	106357	8307
25944	7590	05/13/2004	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			LAVARIAS, ARNEL C	
			ART UNIT	PAPER NUMBER
			2872	

DATE MAILED: 05/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/601,702

**Applicant(s)**

HORIMAI, HIDEYOSHI

**Examiner**

Arnel C. Lavarias

**Art Unit**

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 2/23/04, 1/22/04, 12/17/03, 9/10/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,6-8,16,17,51-56,58-60 and 79-85 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,6-8,16,17,51-56,58-60 and 79-85 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12/17/03, 9/10/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/22/04 has been entered.

### ***Response to Amendment***

2. The amendments to Claims 1, 6-7, 16, 51, 53-54, 56, 59, and 79 in the submission dated 1/22/04 is acknowledged and accepted.

### ***Response to Arguments***

3. The Applicant's arguments with respect to Claims 1-2, 6-8, 16-17, 51-56, 58-60, 79-85 have been considered but are moot in view of the new ground(s) of rejection.
4. Claims 1-2, 6-8, 16-17, 51-56, 58-60, 79-85 are rejected as follows.

### ***Double Patenting***

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d

Art Unit: 2872

1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claim 1, 6-7, 51, 53-56, 59-60 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-24 of copending Application No. US 2004/0042374 A1 to Horimai. Although the conflicting claims are not identical, they are not patentably distinct from each other because copending Application No. US 2004/0042374 A1 to Horimai similarly discloses an optical information recording and reproducing apparatus (See Claim 17) for recording information in and reproducing information from an optical recording medium (See Claim 17, line 3) having a reflecting film and an information recording layer in which information is recorded utilizing holography (See Claim 17, lines 3-7) in the form of an interference pattern as a result of interference between information light (See Claim 17, lines 16-31) carrying the information and reference light (See Claim 17, lines 16-31) for recording having a spatially modulated phase (See Claim 19), the apparatus comprising information light generation means (See Claim 17, lines 10-11); recording reference light generation means including phase modulation means (See Claim 17, lines 12-13; Claim 19); a recording optical system for illuminating the information recording layer on the same side thereof with the information light generated by the light generation means and

the reference light (See Claim 17, lines 16-31, 40-44); reproduction reference light generation means including phase modulation means for spatially modulating the phase of light in the same manner in which the reference light was modulated when the information was recorded (See Claim 17, lines 14-15); a reproducing optical system for illuminating the information recording layer with the reference light for reproduction (See Claim 17, lines 16-31, 40-44); and detection means for detecting the reproduction light collected by the reproducing optical system (See Claim 17, lines 32-34).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

---

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 6, 51, 53-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curtis et al. (U.S. Patent No. 5719691), of record, in view of Tahara et al. (U.S. Patent No. 5856048).

Curtis et al. discloses an optical information recording and reproducing apparatus (See Figure 1) for recording information in and reproducing information from an optical recording medium (See 13 in Figure 1) having an information recording layer in which information is recorded utilizing holography (See Figure 1) in the form of an interference

pattern as a result of interference between information light (See 26 in Figure 1) carrying the information and reference light (See 11 in Figure 1) for recording having a spatially modulated phase (See col. 4, lines 20-37), the apparatus comprising information light generation means (See 26, 15 in Figure 1); recording reference light generation means including phase modulation means (See 11, 25 in Figure 1; col. 4, lines 20-37); a recording optical system for illuminating the information recording layer on the same side thereof with the information light generated by the light generation means and the reference light (See 16, 17, 18, 24, 12 in Figure 1); reproduction reference light generation means including phase modulation means for spatially modulating the phase of light in the same manner in which the reference light was modulated when the information was recorded (See 11, 25 in Figure 1; col. 4, lines 20-37; Abstract; col. 1, line 60-67; col. 10, lines 61-67); a reproducing optical system (See 16, 17, 18, 24, 12 in Figure 1) for illuminating the information recording layer with the reference light for reproduction generated by the reproduction reference light generation means on the same side of the information recording layer that is illuminated with the information light and the reference light for recording and for collecting reproduction light generated at the information recording layer when illuminated with the reference light for reproduction on the same side of the information recording layer that is illuminated with the reference light for reproduction (It is noted that 16, 17, 18, 24, 12 in Figure 1 of Curtis et al. are located on one side of holographic medium 13); and detection means for detecting the reproduction light collected by the reproducing optical system (See 22 in Figure 1).

Curtis et al. lacks the information recording medium having a reflecting film. However,

it is well known in the art of holography to utilize or provide reflecting films on the holographic information recording media used to record holographic information. For example, Tahara et al. teaches a holographic information recording medium (See for example Figures 1-6), wherein the recording medium (See 7 in Figure 6) further includes a reflecting film (See 5 in Figure 6) disposed adjacent to the holographic recording film (See 10 or 6 in Figure 6). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the information recording medium of Curtis et al. further include a reflecting film, as taught by Tahara et al., for the purpose of providing high selectivity in holographic reconstruction of the information stored in the holographic storage medium.

9. Claims 7, 16, 56, 59-60, 79-80, 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curtis et al. in view of Tahara et al. as applied to Claims 1, 6, 51, 53-55 above, and further in view of Burchardt (U.S. Patent No. 3573362), of record, and Liu et al. (U.S. Patent No. 6272095), of record.

Curtis et al. in view of Tahara et al. discloses the invention as set forth above. Curtis et al. in view of Tahara et al. additionally discloses the optical information recording and reproducing apparatus performing spatial multiplexing (See col. 1, lines 15-20; col. 5, lines 23-34; col. 8, lines 1-17 of Curtis et al.). Curtis et al. in view of Tahara et al. lacks information light generation means generating plural information and wavelength selection means for selecting a wavelength of light illuminating the information recording layer from among a plurality of wavelengths. However, Burchardt discloses an optical information reproduction apparatus for recording and reproducing information utilizing

holography (See Figures 3A, 4, 5, 9; col. 9, lines 17-28) from an optical information recording medium having an information recording layer (See 423 in Figure 4), and information light generation means generating plural information lights (it is noted that the plural information lights of Burchardt occur temporally as a function of time, i.e. each pulse generated by 31 occurs sequentially in time). Further, Liu et al. teaches an apparatus and method for storing and/or reading data on an optical disk by holographic means (See Figures 1-2, 4-6, 8-10, 13, 18; col. 3, line 7-col. 6, line 27; col. 18, line 42-col. 19, line 51). In particular, Liu et al. teaches the reproduction reference light generation means (See 104, 106 in Figure 4 for example); a reproducing optical system for illuminating the information recording layer with the reference light and for collecting reproduction light generated at the information recording layer (See 110, 120 in Figure 4 for example); and detection means for detecting the reproduction light collected by the reproducing optical system (See 132, 130, 124 in Figure 4 for example). Liu et al. additionally teaches wavelength selection means for selecting a wavelength of light illuminating the information recording layer from among a plurality of wavelengths (See col. 18, line 20-col. 20, line 52) and the apparatus performing wavelength and spatial multiplexing (See for example Figure 3; col. 20, lines 13-30). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the apparatus and method for storing and/or reading data on an optical disk by holographic means of Curtis et al. in view of Tahara et al. to further include information light generation means generating plural information and also to include wavelength selection means for selecting a wavelength of light illuminating the information recording



layer from among a plurality of wavelengths, as taught by Burchardt and Liu et al. One would have been motivated to do this to take advantage of existing, mature, and low-cost drive mechanisms and electronics found in conventional CD-ROM drives, which are easily modified to operate the above optical reproduction system. One would have been motivated to include wavelength selection means and spatial/wavelength multiplexing to increase the storage density of the recording medium, as well as reducing cross-talk noise.

10. Claims 2, 8, 17, 52, 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curtis et al. in view of Tahara et al., and further in view of Burchardt and Liu et al. as applied to Claims 1, 6, 7, 16, 51, 54, 56, 59 above, and further in view of van Rosmalen (U.S. Patent No. 4638471), of record, Reid et al. (U.S. Patent No. 4213193), of record, or Hays et al. (U.S. Patent No. 5777760), of record.

Curtis et al. in view of Tahara et al., and further in view of Burchardt and Liu et al. discloses the invention as set forth above in Claims 1, 6, 7, 16, 51, 54, 56, 59 above, except for the optical information recording medium having a positioning region, and the apparatus further comprising position control means. However, van Rosmalen, Reid et al., and Hays et al. all discloses various optical recording and reproducing apparatus that utilize a recording medium having a positioning region, and the apparatus further comprising a position control means. van Rosmalen teaches a conventional recording and reproducing apparatus (See Figure 1) wherein the record carrier includes locations having signal information, as well as positional information of the scanning spot relative to the information track (See col. 5, lines 1-20). Reid et al. similarly discloses a

Art Unit: 2872

conventional recording and reproducing apparatus, particularly suited for holography (See Figure 1) wherein particular locations on the storage medium include block bits for providing information on identification and location of any particular data page in one of the plural hologram data tracks (See Figure 8; col. 6, lines 14-49). This data is used in conjunction with a controller means (See 46 in Figure 1; col. 5, line 38-col. 6, line 13). Hays et al. teaches a position feedback system for a volume holographic storage medium (See Figure 10) wherein a plurality of servo blocks are recorded on the storage medium to provide position information to position control means, such as a voice coil motor (See Figure 2; abstract). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the optical information recording medium of Curtis et al. in view of Tahara et al., and further in view of Burchardt and Liu et al. to further have a positioning region, and the apparatus further comprising position control means, as taught by van Rosmalen, Reid et al., and Hays et al., for the purpose of improving storage capacity and reducing cross-talk noise.

11. Claims 81, 83-85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curtis et al. in view of Tahara et al., and further in view of Burchardt and Liu et al. as applied to Claim 79 above, and further in view of Reid et al.

Curtis et al. in view of Tahara et al., and further in view of Burchardt and Liu et al. discloses the invention as set forth above, except for a parity generation unit and the optical recording unit recording a same interference pattern on plural locations on the optical information recording medium. However, Reid et al. teaches a conventional recording and reproducing apparatus, particularly suited for holography (See Figure 1).

Reid et al. additionally discloses particular locations on the storage medium including block and parity bits for providing information on identification, location, and data parity of any particular data page in one of the plural hologram data tracks (See Figure 8; col. 6, lines 14-49). Such parity and block bits are generated prior to or during holographic data recording (See col. 6, lines 21-30) by a generation unit (although not specifically disclosed, such a unit is required to produce such parity and block bit data). It is noted in particular that such a holographic recording and reproducing apparatus provides data redundancy (See col. 1, lines 13-40) wherein such data, whether parity data, block data, or actual holographic data, is recorded multiple times, either in the same location or in multiple locations on the storage medium. Therefore, it would have been obvious to one having ordinary skill in the art to have the optical recording unit of record the same interference pattern on plural locations on the optical information recording medium, as taught by Reid et al., in the optical information recording apparatus of Curtis et al. in view of Tahara et al., and further in view of Burchardt and Liu et al. for the purpose of providing data redundancy and decreasing data retrieval access times.

### *Conclusion*

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 6524771 to Maeda et al.

Maeda et al. is being evidence to further exemplify the use of reflective optical elements with holographic optical recording media used for holographic recording and

Art Unit: 2872

reproduction. Maeda et al. discloses a holographic recording medium (See for example 17, 18, 19) for use in a holographic recording optical system (See Figures 1-2). The holographic recording medium further includes a mirror (See 19 in Figure 2) refractive index matched to the medium (See 18 in Figure 2).

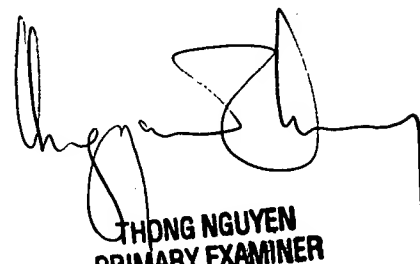
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 571-272-2315. The examiner can normally be reached on M-F 8:30 AM - 5 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Arnel C. Lavarias  
5/5/04



THONG NGUYEN  
PRIMARY EXAMINER  
GROUP 2800